

Master's Thesis

Implementation and comparison of two Routing and Spectrum Assignment solutions for flexible optical core networks

Optical core networks deploy fixed grid in order to accommodate their demands. The trend is however, migrate towards flexgrid networks able to use as much spectrum as required by the demand allowing a better use of the spectrum. However, the Routing and Wavelength Assignment (RWA) paradigm becomes more complex as it has to find the suitable spectrum of the demand.

This thesis will consider two different alternatives to solve the Routing and Spectrum Assignment (RSA) problem. Given a database providing for each (source, destination) pair a set of (route, modulation format, baud rate, OSNR, ...), choose the best route and spectrum for a set of demands.

The implementation will be done in Java. The first alternative is based on an existing work (JOCN2018 paper of Soumplis et al.) and the second alternative will be proposed during the thesis.

The evaluation aims at comparing both solutions in terms of computation time, network utilization, network balancing, blocking probability, energy, etc. Different scenarios will be studied: i) Static, ii) Dynamic sequential: ordered set of demands with T_{start} , iii) Dynamic random: set of random demands with (T_{start}, T_{end})

Prerequisites

Java programming skills

Basic knowledge of flexible optical networks

Advisors

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